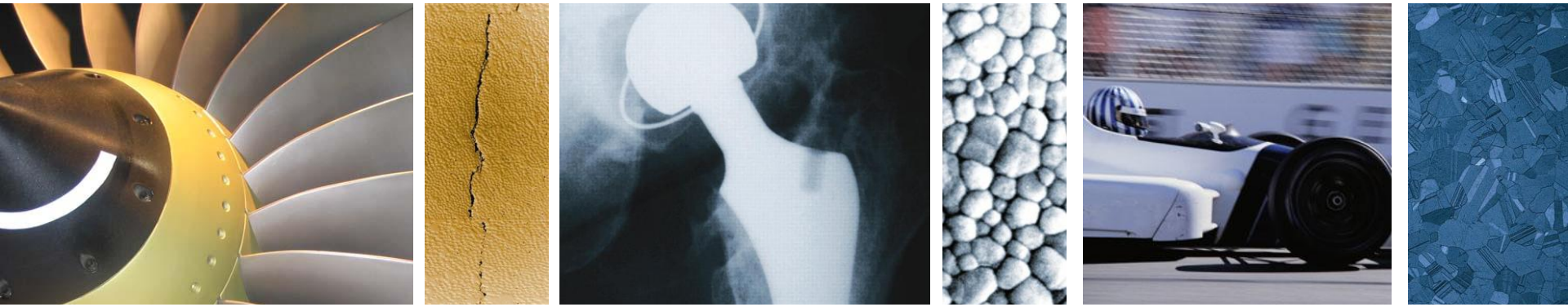
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# Using Surface Treatment Specification Databases to Anticipate and Accelerate Response to Regulatory Changes

**Will Martin**

**28th August 2012**

# Report Documentation Page

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# Overview

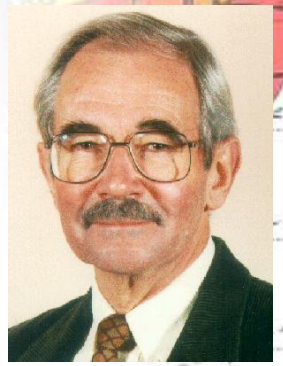
- Introduction to Granta & EMIT
- Drivers for Managing Restricted Substances
- GRANTA MI: Restricted Substances
- Assessing compliance and obsolescence Risk of STS in CAD
- Summary & Conclusions

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# Granta Design - Introduction

## Granta Design – history

- Founded in 1994 from the University of Cambridge
  - Professors Mike Ashby & David Cebon
  - Owners: Cambridge Univ, ASM International, Founders, Employees
- Technology firsts include:
  - Materials selection (Ashby charts, performance indices…)
  - Integrated materials data management
  - Software-based teaching of materials engineering



## The materials information technology experts

- **Software** – manage materials information, selection…
- **Data products** – specialist materials data libraries
- **Services** – implement, configure, apply…

## Customers

- Boeing, Emerson Electric, EADS Astrium, Eurocopter, GE, Honeywell, IHI, Moen, NASA, Raytheon, JLR, TRW Automotive…
- 800+ universities and colleges worldwide

ASM INTERNATIONAL®
The Materials Information Society

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# Consortia

MDMC.net

AWE
Boeing
Honeywell Aerospace
GE - Aviation
GE - Energy
Lockheed Martin
Los Alamos Nat Labs
NASA
Northrop Grumman
Oak Ridge Nat Labs
Raytheon
Rolls-Royce
Sandia Nat Labs
US Navy
US Army Research Labs

EMIT CONSORTIUM

Boeing
EADS Astrium Satellites
Emerson Electric
Eurocopter
Honeywell
Lockheed Martin
NASA
NPL
Rolls-Royce
Thales
US Army Res. Labs

MATERIALS STRATEGY SOFTWARE CONSORTIUM

Baker Hughes
DePuy
Emerson Electric
Ethicon Endosurgery
Moen Inc. (Fortune Brands)
NASA
Rhodia
Sulzer
TRW Automotive

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# Drivers for managing restricted substances

**Regulatory compliance** REACH

**Environmental risk**

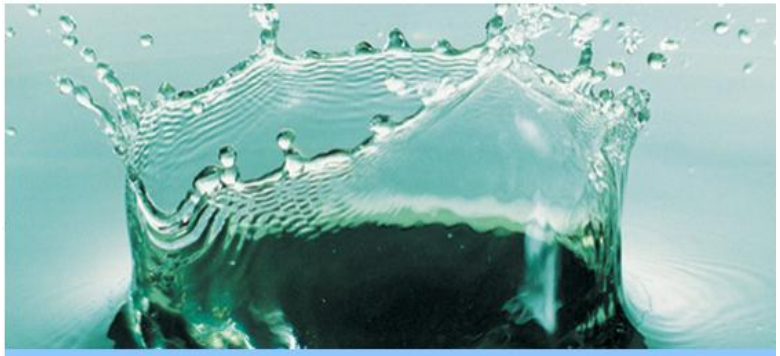
**Brand image**

**Marketing / Market share / Customer requirements**

**Security of supply**

**Cost**

Chemical management



With our longstanding belief in the precautionary principle, eliminating and minimizing the use of hazardous substances in our products and production processes has been one of our priorities since the start of our environmental activities more than three decades ago. It's also an important part of our EcoDesign process.

guardian.co.uk

Tesco and C
with danger
European Environm
being exposed to c

Rebecca Smithers
guardian.co.uk, Friday 22 Oct

The New York Times

China Still Bans Rare Earth to Japan



David Gray/Reuters

The rare earth metal lanthanum is poured into molds at the Jinyuan smelting workshop near the town of Damao in China.

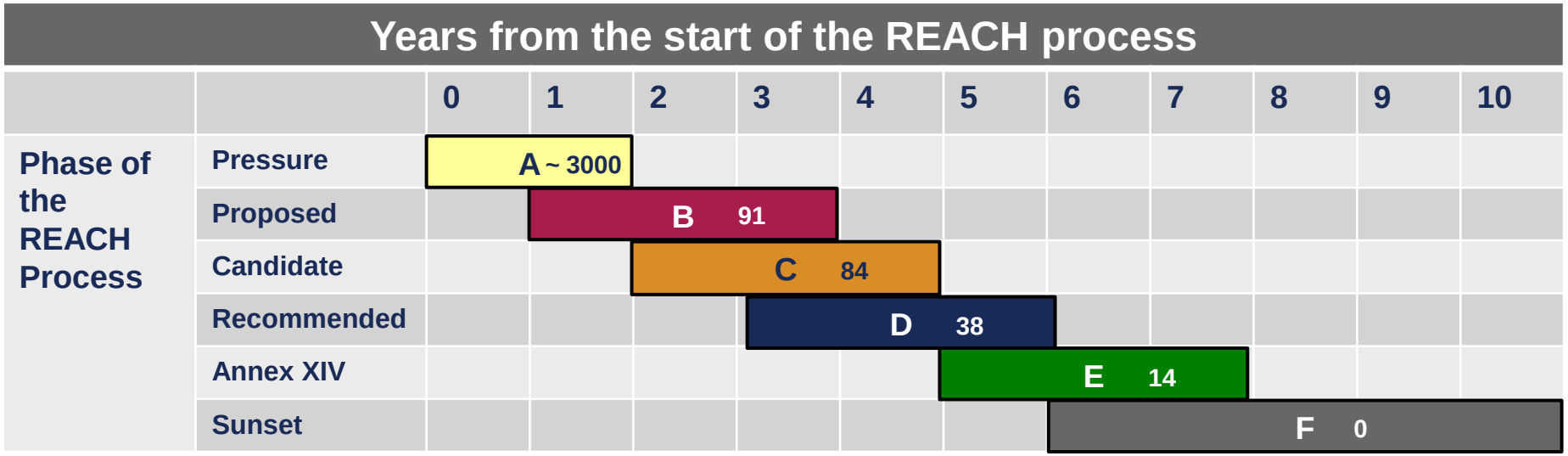
By KEITH BRADSHER
Published: November 10, 2010

HONG KONG — The Chinese government is continuing to block shipments of crucial strategic minerals to Japan, according to industry executives, analysts and a Japanese official.




Tin Whisker Growth on Pure Tin

# Focus on REACH – driving substitution




**A: Pressure groups lobby for particular substances: substance starts to feel regulatory and/or supply chain pressure. E.g. SIN List, ETUC.**

**B: List of proposed 'Candidate List substances' is issued. Substance manufacturers may decide to withdraw from market .**

**C: Substances added to Candidate List. Legal obligations apply if any of these substances are present in products > 0.1 wt% (Article 33, Article 7).**

**D: Recommendation for substances to move from Candidate List to Annex XIV list. Users need to lobby hard for continued use of the substance.**

**E: Substances on Annex XIV list. Users must apply for authorisation to continue use. This will be application specific and for a defined sunset period (usually < 4 years).**

**F: End of Sunset period for substance. Substance cannot be placed on market within EU.**

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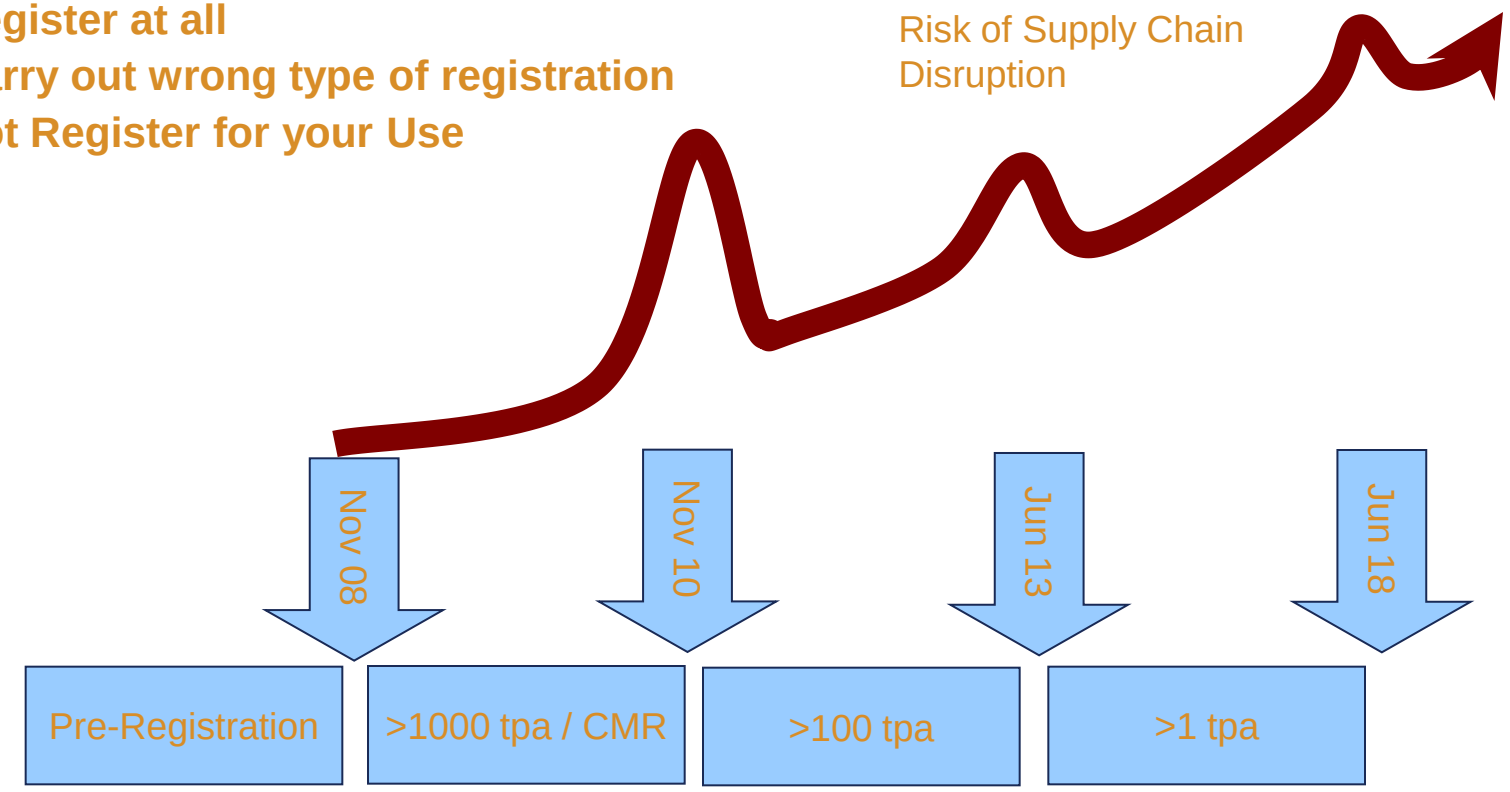
# Registration Risks

**Registration Fees (up to €31k)**

- Cost of admin, Cost of analysis, Chemical Safety Report, MSDS.

→ Risk that supplier may not:

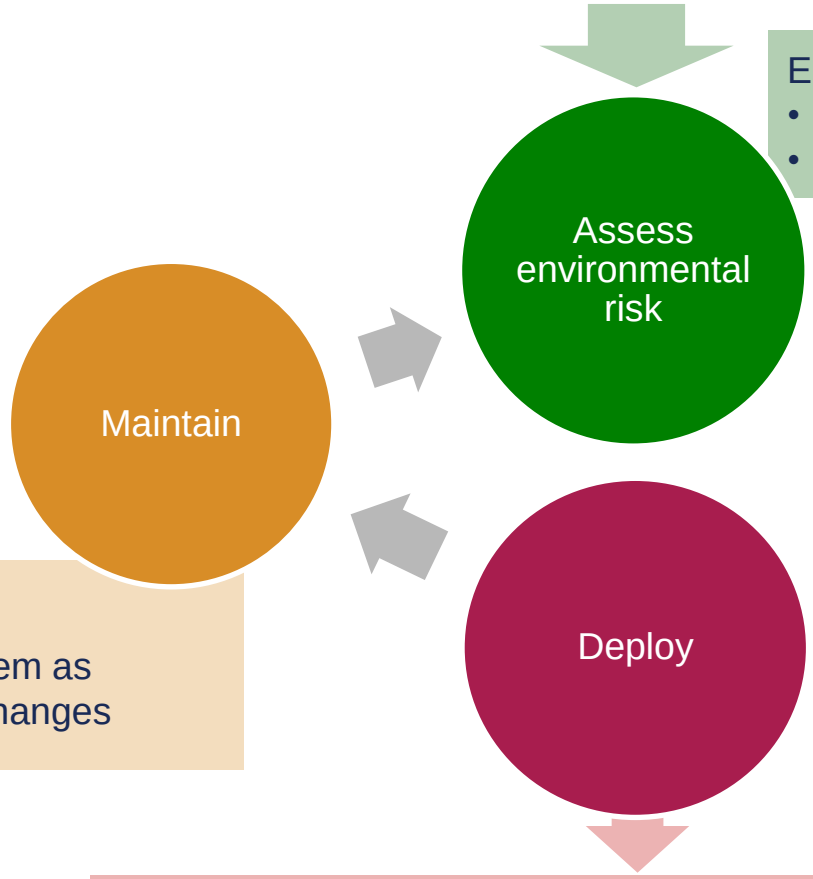
- **Register at all**
- **Carry out wrong type of registration**
- **Not Register for your Use**




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# Restricted substances risk cycle

Compliance | Industry activity | Horizon issues | Customer reqs.




E.g.
- Where are substances used?
- Are there alternatives?

E.g.
- Fight for business critical substances
- Develop obsolescence plan for impacted product

E.g.
- Update system as legislation changes

- Control material selection to avoid problems
- Incorporate compliance & risk assessment workflows into design process (e.g., Gate assessments in CAD)



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# GRANTA MI: Restricted Substances

1. Materials information management system
2. Restricted Substances Data Module
3. Tools

GRANTA MI

Restricted Substances Data Module

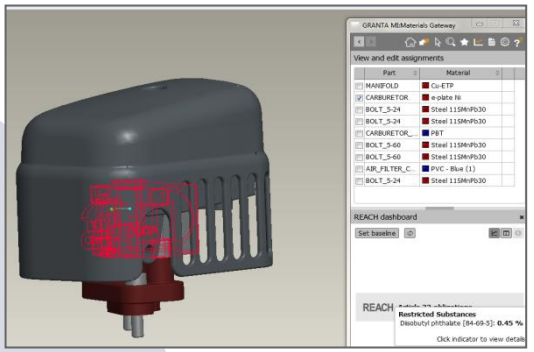
REPORT
*Substances in article, Article 33 ...*

SUBSTITUTION
*Find material alternatives*

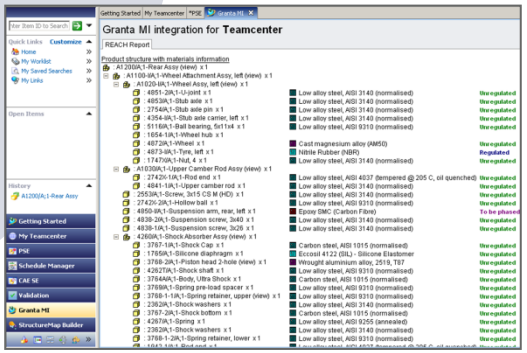
SELECTION
*Design to avoid restrictions (SVHC free…)*

RISK ASSESSMENT
*'Where Used' Data*

INPUT
*Substance declarations, MSDS data, specifications*



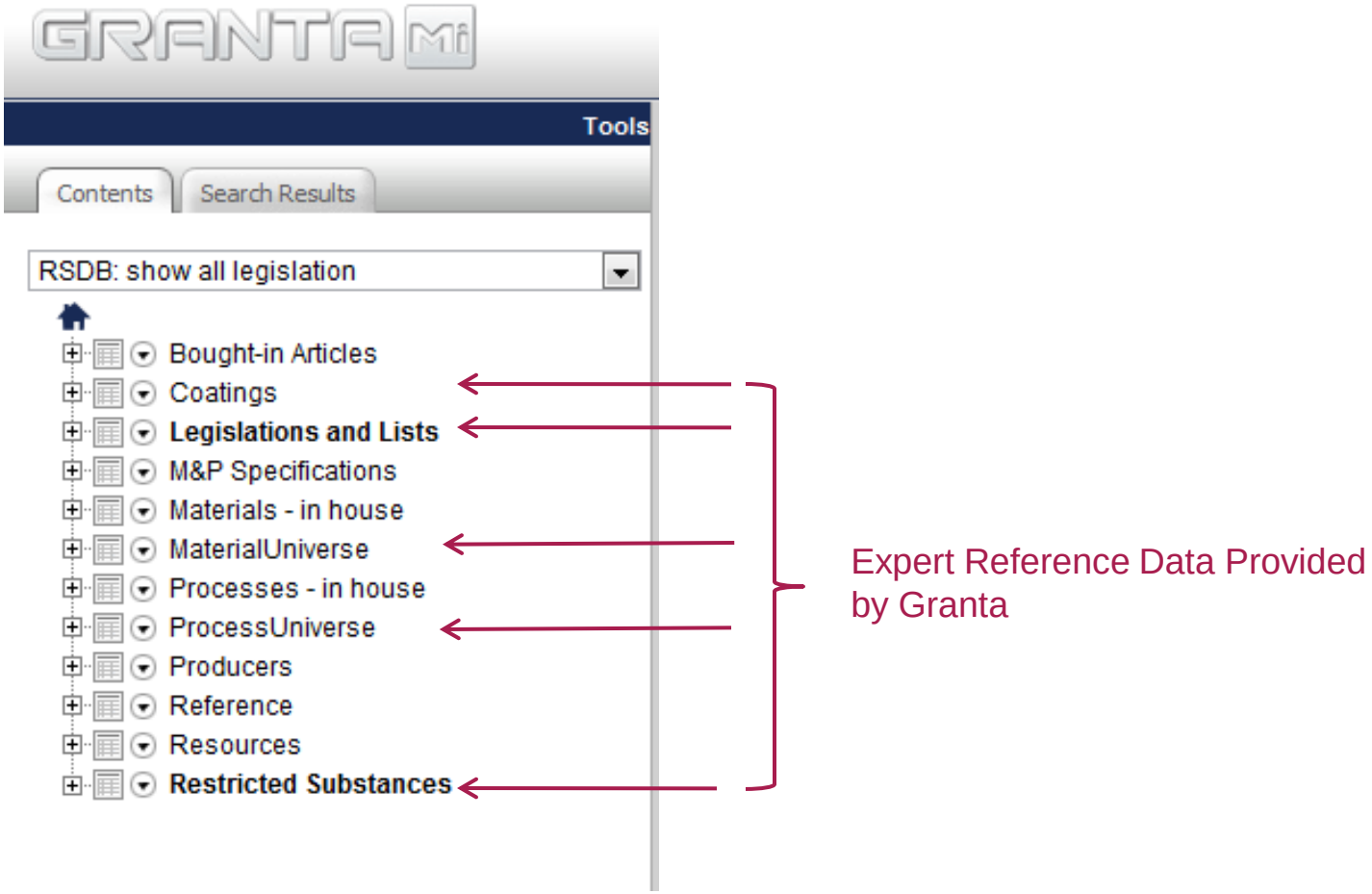

INTEGRATE,
*ACCESS from: PLM, CAD, ERP*



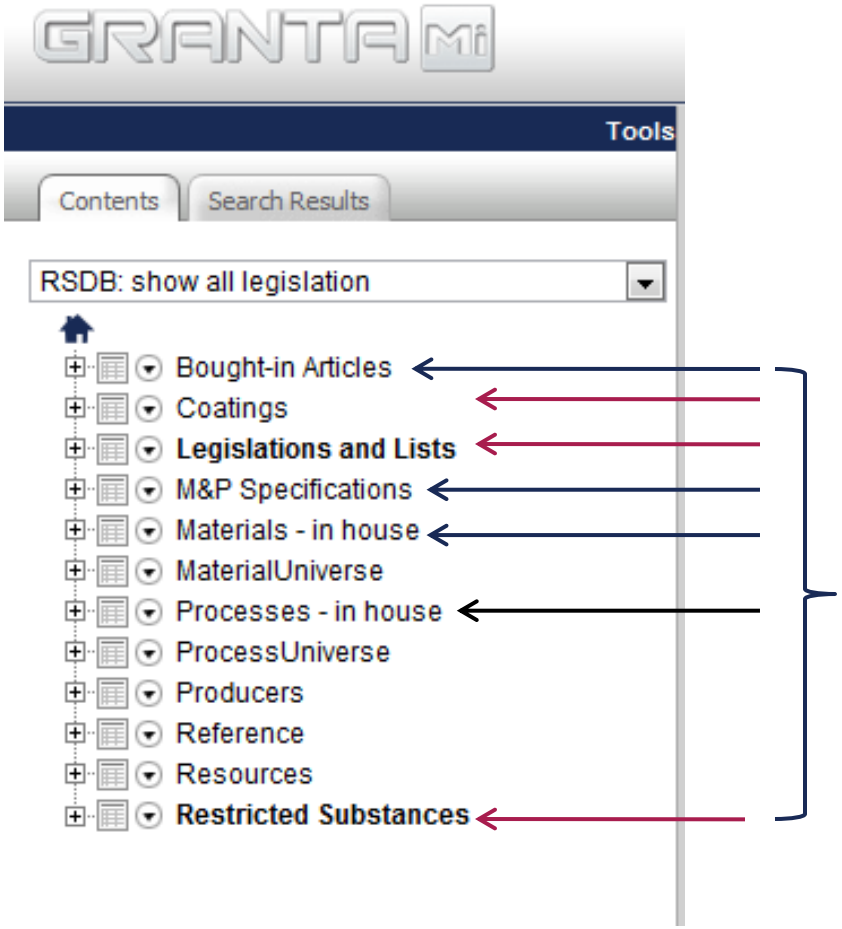

**Quarterly update**

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# Inside the Restricted Substances Data Module



# Inside the Restricted Substances Data Module




Populate System with:

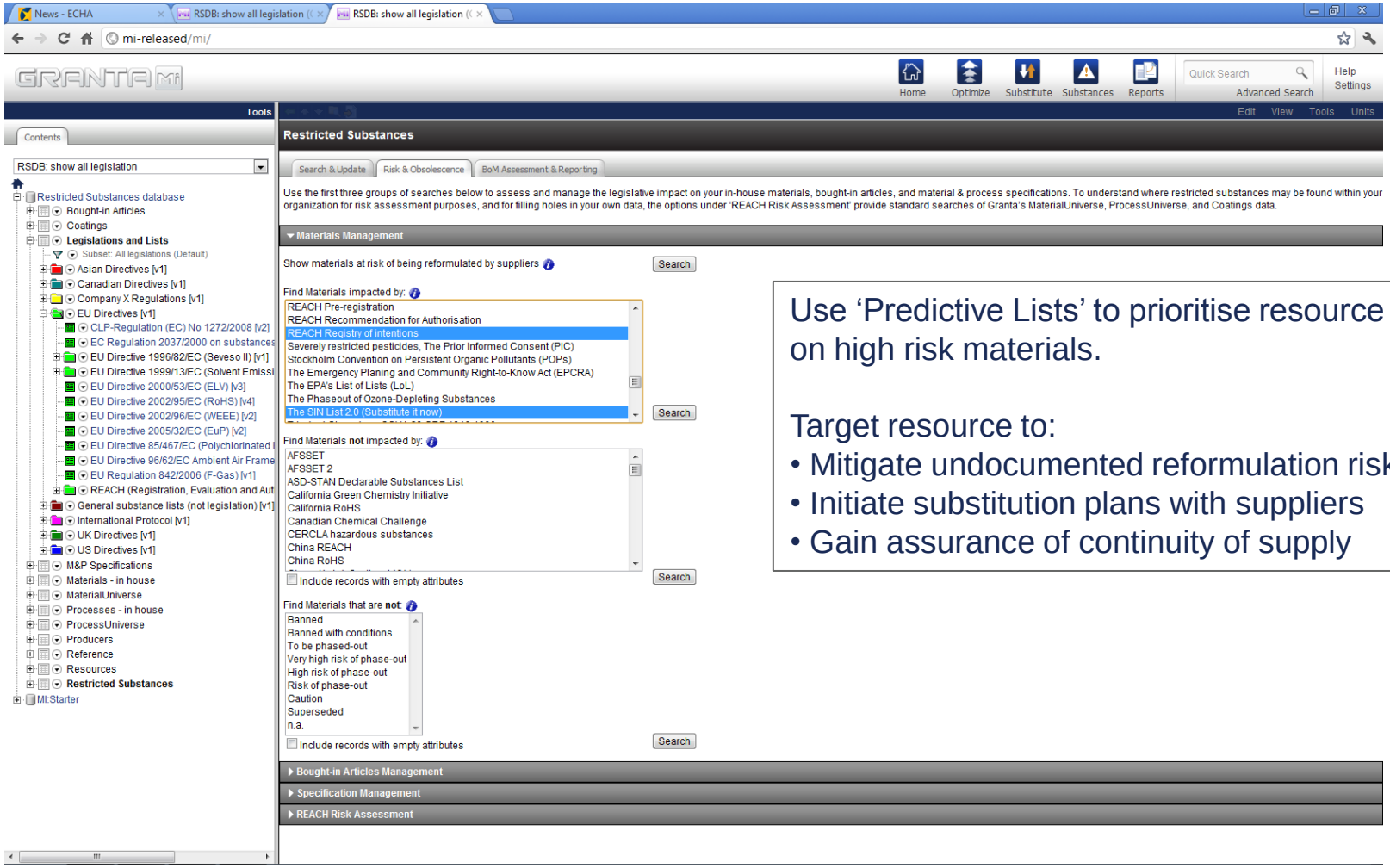
- Supplier declarations
- Other substance data (MSDS)
- Customer / Internal Lists
- Material & Process Specifications

Database container for customer data…

…including augmenting Granta data

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# Core use cases




Use 'Predictive Lists' to prioritise resource on high risk materials.

Target resource to:

- Mitigate undocumented reformulation risk
- Initiate substitution plans with suppliers
- Gain assurance of continuity of supply

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# Demonstration

**Assigning STS in CAD environment**

**Carrying out Compliance & Risk Assessments**

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# Conclusions

**A manual, reactive approach to REACH & similar regulation driving change is unsustainable long term**

**Granta & EMIT are building tools to:**

- **Enable proactive risk assessment of specifications, materials & processes for regulatory impact & obsolescence risk**
- **Use existing infrastructure (e.g. CAD, PLM) to deploy strategy into engineers everyday workflows**
- **Apply datasets built in collaboration with leading experts. E.g. Rowan Technology Group to address engineering problems**
- **Capture 'horizon issues': rare earth metals, geo-political risk factors, nano materials etc**

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# Questions?

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